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EXAMINER

NELSON, FREDA ANN

ART UNIT

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3628

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/730,629

Applicant(s)

RAMESH ET AL.

Examiner

FREDA A. NELSON

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on February 18, 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-15, 17-28, 30-42 and 44-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-15, 17-28, 30-42 and 44-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The amendment received on February 18, 2008 is acknowledged and entered. Claims 1, 3-11, 15, 17-25, 28, 30-38, 42, 44 and 47-52 have been amended. Claims 2, 16, 29, and 43 have been canceled. No claims have been added. Claims 1, 3-15, 17-28, 30-42, and 44-56 are currently pending.

Response to Amendments and Arguments

Applicant's arguments with respect to claims , 3-15, 17-28, 30-42, and 44-56 have been considered but are moot in view of the new ground(s) of rejection.

The rejections under 35 USC 112, 1st and 2nd paragraphs and 35 USC 101 have been withdrawn due to applicant's amendment.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or

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patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1, 15, 28, and 42 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 12, and 23 of copending Application No. 11/328,702 in view of "Access Path Selection in a Relational Database Management System" (hereinafter referred to as "Access Path Selection").

As per claims 1, 12, and 23 of copending application 11/328,702, although the conflicting claims are not identical, they are not patentably distinct from each other because they are an obvious variation to the present application claims since both comparisons perform the same function, in the same way with the same result.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Claims 1, 12, and 23, respectively, of Application No. 11/328,702

recite:

Claim 1:

A method for optimizing processing of a request, the request having one or more predicates, the method including:

creating a list of the one or more predicates in the request;

pruning from the list the predicates for which an actual cost has not been stored or for which a cost cannot be estimated;

selecting an access path for the each of the predicates;

processing the request using the selected access paths, producing one or more actual predicate costs; and

storing the one or more actual predicate costs.

Claim 12:

A computer program, stored on a tangible storage medium, for use in optimizing processing of a request, the request having one or more predicates, the program including executable instructions that cause a computer to:

create a list of the one or more predicates in the request;

prune from the list the predicates for which an actual cost has not been stored or for which a cost cannot be estimated;

select an access path for the each of the predicates;

process the request using the selected access paths, producing one or

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more actual predicate costs; and

store the one or more actual predicate costs.

Claim 23:

A database system including:

a massively parallel processing system including: one or more nodes; a plurality of CPUs, each of the one or more nodes providing access to one or more CPUs;

a plurality of data storage facilities, each of the one or more CPUs providing access to one or more data storage facilities;

a process for optimizing processing of a request, the request having one or more predicates, the process including:

creating a list of the one or more predicates in the request;

pruning from the list the predicates for which an actual cost has not been stored or for which a cost cannot be estimated;

selecting an access path for the each of the predicates;

processing the request using the selected access paths, producing one or more actual predicate costs; and

storing the one or more actual predicate costs.

Claim 1, 12, and 23 of U.S. Application No. 11/328,702 differs since it further recites additional claim limitations including creating a list of the one or more predicates in the request; and pruning from the list the predicates for which an actual cost has not been stored or for which a cost cannot be estimated.

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However, it would have been obvious to a person of ordinary skill in the art to modify claim 1 of U.S. Application No. 11/328,702 by removing the limitations directed to creating a list of the one or more predicates in the request; and pruning from the list the predicates for which an actual cost has not been stored or for which a cost cannot be estimated since the claims of the present application and the claim recited in U.S. Application 11/328,702 actually perform a similar function. It is well settled that the omission of an element and its function is an obvious expedient if the remaining elements perform the same function as before. *In re Karlson*, 136 USPQ 184 (CCPA 1963). Also note *Ex parte Rainu*, 168 USPQ 375 (Bd. App. 1969). Omission of a reference element whose function is not needed would be obvious to one of ordinary skill in the art.

Also, claim 1, 12, and 23 of U.S. Application No. 11/328,702 differs since it fails to recite:

identifying the relations in the request; extracting the predicates from the request; for each predicate, associating the predicate with the one or more access paths identified for the one or more relations referenced in the predicate; estimating the cost of one or more access paths associated with the predicate; and for each access path, selecting the cheaper of the estimated access path cost and an actual access path cost, if one exists; processing the request using the selected access path, producing one or more actual path element costs.

"Access Path Selection" discloses "accessing a singing relation (pg 25, Sect 4, 1st ¶); receiving simple predicates specified by the user (pg 23, Sect 2, 2nd ¶); The catalog lookup potion of the OPTIMIZER also obtains statistics

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about the referenced relations, and the access paths available on each of them (pg. 24, 2nd ¶); and for single relations, the cheapest access path is obtained by evaluating the cost for each available access path (each index on the relation) (page 23, 2nd ¶),

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify claims 1, 12, and 23 of U.S. Application 11/328,702 and include the function of "Access Path Selection" in order to provide the user the ability select the cheapest access path when requesting a query.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3-5, 15, 17-19, 28, 30-32, 42, and 44-46 are rejected under 35 U.S.C. 102(b) as being anticipated by "Access Path Selection in a Relational Database Management System" (hereinafter referred to as "Access Path Selection").

As per claims 1, 15, 28, and 42, "Access Path Selection" discloses a method for optimizing processing of a request, the request including one or more predicates, each predicate referencing one or more relations, the method including:

identifying the relations in the request (page 25, Sect.4, 1st ¶);

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identifying one or more access paths for each relation (page 27, 2nd ¶-5th ¶);

extracting the predicates from the request (page 27);

for each predicate, associating the predicate with the one or more access paths identified for the one or more relations referenced in the predicate (page 27, 2nd ¶-5th ¶);

estimating the cost of one or more access paths associated with the predicate (page 27, 2nd ¶-5th ¶); and

for each access path, selecting the cheaper of the estimated access path cost and an actual access path cost, if one exists (page 27);

processing the request using the selected access path, producing one or more actual path element costs (page 27); and

storing the one or more actual access path request element costs (page 23, Sect.1, 4th ¶; page 23, Sect. 2- page 24, Sect. 3. 2nd ¶).

As per claims 3, 17, 30, and 44, "Access Path Selection" discloses disclose the method of claim 1 where estimating the cost of one or more access paths includes: retrieving estimated costs stored in a data dictionary (page 24, Sect. 3, 2nd ¶; page 27, 2nd -4th ¶).

As per claims 4, 18, 31, and 45, "Access Path Selection" discloses the method of claim 1 where estimating the cost of one or more access paths

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includes: performing selectivity costing based on one or more of selectivity, cardinality and statistics (page 25, Sect 4, 4th ¶- page 27, 1st ¶);.

As per claims 5, 19, 32, and 46, "Access Path Selection" discloses the method of claim 1 where selecting an access path further includes:

for each predicate, selecting the lowest cost access path from among the access paths associated with each predicate (page 27, 2nd ¶-5th ¶).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 6-9, 20-23, 34-36, and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Access Path Selection in a Relational Database Management System" (hereinafter referred to as "Access Path Selection"), in view of Tyunelev et al. (US Patent Number 6,957,211).

As per claims 6-7, 20-21, 34-35, and 48-49, "Access Path Selection" does not expressly disclose the method of claim 1 where requests are sorted into workload groups and the method further includes: categorizing the actual access path request element costs according to the workload group to which the request belongs; and

where selecting an access path for the request taking into consideration a stored actual access path request element cost includes: taking into consideration the categorized actual access path request element cost, if it exists, for the workload group to which the request belongs.

However, Tyunelev et al. discloses the query optimization function is tuned based on the workload specified by the user of the query. The workload can optionally be a workload the database 132 is operating under, or a workload selected by the DBMS based on a heuristic algorithm, rather than the workload specified by the user of the query (col. 10, lines 7-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of "Access Path Selection" to include the feature of Tyunelev et al. in order to provide the user with a more cost effective query.

As per claims 8-9, 22-23, 35-36, and 49-50, "Access Path Selection" does not expressly disclose the method of claim 1 where storing the one or more actual request element costs includes: storing the one or more actual access path request element costs in a cache; and where storing the one or more actual access path request costs includes: backing up the stored one or more actual access path request element costs from the cache to a query capture data base.

However, Tyunelev et al. disclose CPU have workload-specific values; and other system statistics, such as caching ratios, maximum I/O system throughput, or average parallel process throughput, can also be measured

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separately for each workload (col. 61- col. 10, line 27). Tyunelev et al. further disclose the main memory 208 also may be used for storing temporary data, i.e., variables, or other intermediate information during execution of instructions by the processor(s) 204 (col. 3, line 55-col. 4, line 2; s col. 4, lines 13-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of "Access Path Selection" to include the feature of Tyunelev et al. in order to provide the user the ability to store frequently accessed data to expedite data access.

3. Claims 10-11, 24-25, 37-38, 41, 51-52, and 55-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Access Path Selection in a Relational Database Management System" (hereinafter referred to as "Access Path Selection"), in view of Tyunelev et al. (US Patent Number 6,957,211), still in further view of Ziauddin (US Patent Number 5,899,986).

As per claims 10-11, "Access Path Selection" does not expressly disclose the method of claim 1 further including:

assigning the request to an one of a plurality of workload groups; and
where selecting an access path for the request includes taking into consideration a stored actual access path request element cost if the one of the plurality of workload groups is identified for such processing; and

where selecting an access path for the request does not include taking into consideration a stored actual access path request element cost if the one of the plurality of workload groups is not identified for such processing.

However, Ziauddin discloses when an RDBMS system receives a query, its optimizer analyzes the structure of the query, analyzes the various clauses (e.g. selection and join predicates) specified in the query, and examines existing data access paths (e.g. indexes) to formulate a strategy (e.g., method) of performing various relational operations (e.g., aggregation, sort, search, join, etc.) to produce the result of the query (col. 1, lines 27-38; col. 6, lines 3-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of "Access Path Selection" to include the feature of Tyunelev et al. and Ziauddin in order to provide the user the ability to quickly access the most important or frequently accessed data in order to expedite data access.

As per claims 12-13, 26-27, 39-40, and 53-54, Ziauddin does not expressly disclose performing at least a portion of the workload analysis off-line; or performing at least a portion of the workload analysis in real time. However, information as to performing the workload analysis off-line or in real time is non-functional language and given no patentable weight. Non-functional descriptive material cannot render non-obvious an invention that would otherwise have been obvious. See: *In re Gulack* 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983) *In re Dembiczak* 175 F.3d 994, 1000, 50 USPQ2d 1614, 1618 (Fed. Cir. 1999). The specific example of non-functional descriptive material is provided in MPEP 2106, Section VI: (example 3) a process that differs from the prior art only with respect to non-functional descriptive material that cannot alter how the

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process steps are to be performed. The method steps, disclosed would be performed the same regardless of timing. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made that it was old and well known to perform analysis online, offline or in real-time because such timing does not functionally relate to the steps in the method claimed and does not patentably distinguish the claimed invention.

Examiner's Note

Examiner cited particular pages, columns, paragraphs and/or line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRED A. NELSON whose telephone number is (571) 272-7076. The examiner can normally be reached on Monday and Wednesday-Friday, 8:30 AM -4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hayes can be reached on 571-272-6708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/F. A. N./
Examiner, Art Unit 3628
5/23/2008

/JOHN W HAYES/
Supervisory Patent Examiner, Art Unit 3628